

**METAL VS WOOD BATS  
BATTED BALL INJURIES**

**FREDERICK O. MUELLER, Ph.D.  
UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL  
NATIONAL CENTER FOR CATASTROPHIC SPORTS INJURY RESEARCH**

Based on my extensive studies of sports injuries, baseball injuries (including batted ball injuries) are very rare, and there is no evidence that batted ball injuries are a greater problem from aluminum bats as compared to wood bats.

I think it is important to give you some of my background so you better understand my remarks. I am currently a Professor in the Department of Exercise and Sport Science at the University of North Carolina at Chapel Hill and Director of the National Center for Catastrophic Sports Injury Research. The National Center collects catastrophic (deaths, disability, and serious injury) data for both high school and college sports on a national level. I am also a member of the Medical and Safety Advisory Committee for USA Baseball and USA Lacrosse. I was also the Chairman of the National Collegiate Athletic Association (NCAA) Competitive Safeguards and Medical Aspects of Sports Committee. I mention these organizations due to the fact that they were all initiated in order to collect injury data that would allow them to make important decisions concerning their sport programs. The NCAA committee was constantly asked important questions concerning rule changes and equipment, but did not have any data to back up any recommendations. Their injury data collection system started in 1982, during my term on the committee, and has played a significant role in many important decisions related to NCAA sports.

I give you this information after reading a copy of the council's proposal to prohibit the use of non-wood bats in high schools. Section 10-163 the last sentence states as follows: **The Council hereby finds that the use of these non-wood bats places our children, particularly those of high school age, at an unacceptable risk of injury.** I am actively involved in collecting injury data for all sports and I am not aware of any data that suggests there is a rise of injuries to baseball players from batted balls hit by non-wood bats. There is anecdotal information, but if we start making decisions based on anecdotal data there are going to be problems. If there were sufficient data available the Consumer Product Safety Commission would not have denied a petition requiring that all non-wood bats perform like wood bats (reference #2 — May 13, 2002). In the last sentence of this reference the Consumer Product Safety Commission states — Current data and information are not sufficient for this task. Also in paragraph 3 the letter states that the commission is not aware of any information that injuries produced by balls batted with non-wood bats are more severe than those involving wood bats.

**A press release dated July 2002 from USA Baseball quotes Dr. Barry Goldberg, Director of Sports Medicine at Yale University and Chairman of the USA Baseball Medical and Safety Committee, "According to years of record keeping there is no discernable evidence to suggest that using aluminum bats poses any greater risk than using wood bats. Aluminum**

**bats have indeed been good for amateur baseball and until someone can provide research that proves that metal poses a greater threat than wood bats, I see no reason why they should be banned.” In the same press release USA Baseball President Paul Seiler reaffirmed his organizations stance that aluminum bats are suitable for use in Youth Leagues, High School, and Collegiate competition.**

In a ten-year injury study, **Injuries in Little League Baseball from 1987 through 1996, by Mueller, Marshall, and Kirby, The Physician and Sportsmedicine, July 2001**, the authors found 5,882 batted ball injuries with 2,142 injuries to outfielders, 2,135 to infielders, and 1,022 (17%) to pitchers. Participation numbers for the ten years were 17,221,210. The batted ball injury rate was 3.4 injuries per 10,000 participants. There were also 13 fatalities during this same period of time and a batted ball caused one of the fatalities.

The Medical/Safety Advisory Committee of USA Baseball was initiated due to the total lack of injury data needed to make decisions affecting the safety of baseball participants. **The final catastrophic injury report of the Medical/Safety Advisory Committee of USA Baseball – 1989 – 2005** covers all of amateur baseball played in the United States. The definition of catastrophic is death, permanent disability, and serious (a serious injury- fx skull, fx vertebra with full recovery). The important section is the table that illustrates the number of catastrophic injuries, the number of participants, and the injury rate per 100,000 participants. The overall injury rate is 0.11 catastrophic injuries per 100,000 participants or 1 catastrophic injury for every one million participants. This figure is very low and is another indication that baseball is a very safe sport. The seventeen-year injury rate for fatalities was 0.05 per 100,000 participants, 0.03 for disability injuries, and 0.03 for serious injuries with recovery. All three categories show less than one injury for every one million participants.

**The National Center for Catastrophic Sports Injury Research at the University of North Carolina at Chapel Hill** has collected high school catastrophic (deaths, disability, and serious injury with recovery) baseball injuries from 1982-83 – 2003-04.

COLLEGE PITCHERS – 4 CATASTROPHIC BATTED BALL INJURIES – ONE  
DISABILITY AND THREE RECOVER. 500,000 PARTICIPANTS

HIGH SCHOOL PITCHERS – 11 CATASTROPHIC BATTED BALL INJURIES – 4  
DISABILITY, 5 RECOVER, AND 2 UNKNOWN  
9 MILLION PARTICIPANTS

At the present time there is a research project being conducted comparing batted ball injuries to the pitcher from metal bats in NCAA baseball to batted ball injuries to the pitcher from wood bats in college summer league play. The study results to date indicate that the level of injury is low for both wood and aluminum bats, the frequency of injury is higher for balls hit off aluminum bats, and all the severe injuries (to the face and skull) were as a result of hits off wood bats. The results to date are incomplete and not statistically significant, and the research will be completed in the summer of 2007.

**Before any sport makes rule changes, equipment changes, or other changes related to the safety of the participants it is imperative that these changes be based on reliable injury data and not anecdotal information.**

---

Frederick O. Mueller, Ph.D.